

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 02-0089	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2004/027378	International filing date (day/month/year) 20/08/2004	(Earliest) Priority Date (day/month/year) 22/08/2003
Applicant THE BOEING COMPANY		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☐ **Unity of invention is lacking** (see Box III).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 2

☐ as suggested by the applicant.

☒ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2004/027378

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

An aircraft part manufacturing device for automated composite lay up includes a mandrel tool (202) having a an interior mandrel surface that conforms to an outside mold line (OML) of a part: to be manufactured. One or more circular rings (212, 214) surround the mandrel and are attached to the mandrel. The circular rings rotate supported by bearings (216) in a bearing cradle so that the mandrel rotates concentrically with the circular rings about an axis of rotation passing through the center of the circular rings. A composite material delivery head delivers material directly to the outside mold line on the interior mandrel surface while the mandrel is rotated. A cantilever supported gantry beam supports the material delivery head inside the interior mandrel surface. A connecting mechanism connects the material delivery head to the gantry beam (220) and provides motion of the material delivery head relative to the interior mandrel surface.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/027378

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B29C70/38 B29C70/32
//B29L23:00, B29L31:30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 22 50 706 A1 (GOLDSWORTHY ENGINEERING, INC., TORRANCE, CALIF. ; GOLDSWORTHY ENGINEER) 25 April 1974 (1974-04-25)	1-7, 9-17, 19, 20, 22, 28-32
Y	page 44, paragraph 1; claims; figures	8, 18, 21, 23-27, 33
Y	----- US 4 574 029 A (MURRAY ET AL) 4 March 1986 (1986-03-04) column 1, line 21; figures -----	8, 18, 21, 23-27, 33

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

19 August 2005

Date of mailing of the international search report

26/08/2005

Name and mailing address of the ISA

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Authorized officer

Van Wallene, A

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/027378

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 2250706	A1	25-04-1974	GB 1405667 A	10-09-1975
			FR 2201960 A1	03-05-1974
			US 3957410 A	18-05-1976
			US 3783060 A	01-01-1974
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US 4574029	A	04-03-1986	NONE	
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/027378

International filing date (day/month/year)
20.08.2004

Priority date (day/month/year)
22.08.2003

International Patent Classification (IPC) or both national classification and IPC
B29C70/38, B29C70/32

Applicant
THE BOEING COMPANY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/027378

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/027378

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	8,18,21,23-27,33
	No: Claims	1-7,9-17,19,20,22,28-32
Inventive step (IS)	Yes: Claims	
	No: Claims	1-33
Industrial applicability (IA)	Yes: Claims	1-33
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V.

1 Reference is made to the following documents:

D1 : DE 22 50 706 A1 (GOLDSWORTHY ENGINEERING, INC., TORRANCE,
CALIF. ; GOLDSWORTHY ENGINEER) 25 April 1974 (1974-04-25)

D2: US-A-4 574 029 (MURRAY ET AL) 4 March 1986 (1986-03-04)

2 INDEPENDENT CLAIMS 1 and 28

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
Document D1 discloses (the references in parentheses applying to this document):
a device for automated composite lay-up, comprising:
a tool (fig. 15) having an axis of rotation and an outside mould surface on an inside of a mandrel; and
a circular ring (235, page 44, paragraph 1) surrounding said tool and said mandrel and concentric with said axis of rotation wherein said tool is rotated about said axis of rotation and composite material is delivered directly to said outside mould surface (claim 23) on the inside of said mandrel (claims 1 and 2).
- 2.2 Document D1 also discloses a method of using the above apparatus as defined in claim 28. Claim 28 is therefore not novel either,
3. The subject matter of dependent claims (see also Box VIII below) 2 to 7, 9 to 17, 19 and 29 to 32 is also disclosed in document D1. The subject matter of these claims is therefore not novel
4. Claims 8, 18, 21, 23-27 and 33 relate to a particular arrangement for supporting a gantry beam by a tail stock as well as the use of the above method and apparatus for the production of aircraft parts. These features solve the problem of elastic deformation of the gantry and discontinuities in aircraft structures when using two part moulds respectively. These features as well as their related problems have been

disclosed in documents D1 and D2 respectively. The skilled man would therefore combine the teachings of these documents to arrive to the subject matter of these claims in order to solve the respective problems posed.

Re Item VIII.

Claims 9, 15 and 23 comprise all the features of claim 1 and are therefore not appropriately formulated as a claim dependent on the latter (Rule 6.4 PCT).

It is clear from claim 1 that the feature of a circular ring is essential to the definition of the invention. Since independent claim 24 does not contain this feature, it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.